

3.15 p. m. a southwesterly gale set in and increased in force until 10 p. m., when it reached a velocity of sixty miles per hour.

Sandusky, Ohio: light rain and snow, with southwesterly winds, prevailed during the early morning of the 26th. From 5.15 a. m. until 10 a. m. the wind blew at the rate of from twenty to twenty-five miles per hour, attaining at one time a velocity of thirty-five miles per hour. At 10 a. m. it veered to the west and increased in velocity. The gale continued during the remainder of the day, throughout the 27th, and until 6 a. m. of the 28th. On the 27th it frequently attained a velocity of thirty to forty-six miles per hour, with snow squalls at intervals. The observer states that the wind storm was more severe and continued longer than any other that has occurred since the establishment of this station.

Buffalo, New York: rain and snow fell at intervals throughout the 26th. A severe southeasterly gale set in at 12.40 p. m. and continued until after midnight. The observer at this place states that this was the most destructive storm that has occurred here for several years. Six houses in course of construction were levelled to the ground, and one person killed; a number of persons were injured by falling signs, trees, etc. The gale continued throughout the night of the 26-27th and until 9.35 a. m. of the 28th, reaching at 6.55 a. m. of the 27th a velocity of sixty-one miles per hour.

Rochester, New York: during the night of the 25-26th the barometer fell rapidly, from 30.02 to 29.40; at 8 a. m. the wind increased in force and began blowing a gale from the south, reaching at 2 p. m. a velocity of fifty-four miles per hour. The gale continued during the day, but shifted after midnight to the west and northwest.

Pittsburg, Pennsylvania: from 4 to 5.15 a. m. of the 26th heavy snow fell, from 5.15 a. m. until 3.30 p. m. rain fell, also from 6.35 to 9 p. m.; total precipitation, 2.01 inches. High easterly winds prevailed during the greater part of the day; late in the afternoon a westerly gale set in, maximum velocity, forty miles per hour, at 7.40 p. m. The high wind damaged property to the extent of several thousands of dollars. Brisk westerly wind continued to blow all day of the 27th, attaining at 2.40 a. m. a velocity of thirty-two miles per hour.

Erie, Pennsylvania: on the 26th a very severe wind storm set in at 12.45 a. m., attaining at 2.10 p. m. a velocity of forty-four miles per hour from the south; for five minutes, at about 12.30 p. m., the wind blew at the rate of fifty miles per hour. Snow fell during the night of the 26-27th. On the 27th the wind blew hard all day from the northwest, greatest velocity forty-three miles per hour. The gale continued until 4.15 a. m. of the 28th. This gale was continuous for fifty-one hours and thirty minutes, and raised the water in the harbor higher than has been known for years, doing considerable damage to property on and about the wharves. Several light buildings were blown down, and one person killed.

Louisville, Kentucky: clear weather, high temperature, and heavy westerly winds prevailed during the 27th; in the afternoon the wind blew a gale and did considerable damage, especially along the river. The steamers "Residence" and "Hibernia" were thrown together by the force of the gale, the former was sunk and the latter badly damaged. The exposition buildings were also injured to the extent of about \$1,000.

NORTH ATLANTIC STORMS DURING FEBRUARY, 1887.

[Pressure in inches and millimetres; wind-force by Beaufort scale.]

The paths of the depressions that have appeared over the north Atlantic Ocean during the month are determined, approximately, from international simultaneous observations furnished by captains of ocean steamships and sailing vessels; abstracts of ships' logs and other data collected by the Signal Service agencies at the ports of New York, Boston, and Philadelphia; reports received through the co-operation of the "New York Herald Weather Service;" abstracts of ships' logs furnished by the proprietors of the "New York Maritime Register," and from other miscellaneous data received at this office up to March 21, 1887.

Twelve depressions are traced, of which six passed eastward over Newfoundland; one apparently developed south of Nova Scotia, and five first appeared over mid-ocean. The general course of direction of the depressions was east-northeast to northeast, the exceptions being number v, which moved northwest from northward of the Azores, and number vii, which passed north-northeast over mid-ocean.

The month opened with a deep depression central over mid-ocean in about N. 54°, which caused unsettled weather and gales from the Banks of Newfoundland to the British Isles. To the southward of Newfoundland, and over the entire ocean south of the fortieth parallel, the barometric pressure was high. During the 2d and 3d low pressure, with north to west gales and rain, continued over the ocean east of the Banks, while off the American coast and to the southward of the fortieth parallel the barometer was high. On the 4th, under the influence of a depression which passed eastward over the Gulf of Saint Lawrence and Newfoundland, there was a decided de-

crease in barometric pressure, and strong south to west gales and rain off the coasts of the United States and Canadian Maritime Provinces and south of the Banks; there was also an appreciable decrease in pressure over, and to the eastward of, the Azores. On the 5th fresh to strong gales encircled a deep depression which had advanced over mid-ocean from Newfoundland, and the barometer had risen rapidly west of the fiftieth meridian and over, and to the westward of, the Azores. By the 6th the centre of disturbance had moved northeast and the pressure continued high over the western portion of the ocean, exhibiting a barometric maxima off the coast of the United States, where rain and fresh gales indicated the approach, or development of, a cyclonic area.

By the 7th there had been a rapid increase in pressure over the ocean to the eastward of the Banks, and an area of low pressure, which evidently developed in the vicinity of Nova Scotia, was central south of Newfoundland. By the 8th the depression had advanced rapidly northeastward from the southern edge of the Banks of Newfoundland, accompanied by violent disturbances, which were encountered southward to the thirtieth parallel; over the eastern and western portions of the ocean the barometer was high. On the 9th two depressions, one to the northward of the Azores and the other over the Gulf of Saint Lawrence, contributed to cause stormy weather west of the twentieth meridian; over the British Isles the pressure was high. On the 10th two depressions appeared, one, of considerable depth, having moved southeast over the Banks from the Gulf of Saint Lawrence, and the other, relatively shallow, having advanced from the southeastward over mid-ocean; over the British Isles and off the coast of the United States the pressure was high.

On the 11th a depression of moderate depth was central over mid-ocean and the barometer was falling rapidly over, and to the southward of, the Canadian Maritime Provinces; over the eastern portion of the ocean the pressure continued high. On the 12th a depression central south of Newfoundland caused heavy gales over the Banks and southward to the thirtieth parallel; over the eastern half of the ocean the barometer was high, with generally settled weather. By the 13th a depression had advanced northeast over mid-ocean from south of Newfoundland, accompanied by fresh to strong gales and rain; the depression, while not exhibiting unusual barometric minima, dominated the wind-directions from coast to coast, and the barometric gradient was steep to the eastward and westward. On the 14th the pressure was generally high from coast to coast. On the 15th a depression of slight depth appeared to the eastward of the Banks; over the balance of the ocean the pressure was high. On the 16th a shallow depression was central off the coast of the United States, in N. 39°, and a cyclonic area of slight energy was located over mid-ocean in N. 50°; to the eastward of the twenty-fifth parallel and southeast of the Banks the pressure was high. On the 17th a depression central over the Gulf of Saint Lawrence caused unsettled weather over, and to the southward of, Newfoundland; over all other portions of the ocean the pressure was high and the weather generally settled.

By the 18th the passage of a shallow depression northward of the fiftieth parallel caused fresh gales and rain over the Banks, while over the eastern half of the ocean and off the coast of the United States the pressure was high. During the 19th and 20th the pressure continued high over the ocean, except that on the latter date the barometer fell rapidly over Newfoundland and the adjacent ocean, with winds shifting to southerly over the Banks, indicating the approach of a barometric depression from the westward. By the 21st a storm-area of considerable energy had passed rapidly northeast over mid-ocean from the Gulf of Saint Lawrence, and the barometer had fallen rapidly from the forty-fifth meridian to the British coasts. From the 22d to the close of the month the meteorological conditions over the ocean were very unsettled, and the depressions which appeared daily over mid-ocean were characterized by disturbances of pronounced strength.

For February, 1886, the paths of eleven depressions were traced, of which, four were continuations of storms which first appeared over the North American continent; one apparently developed off the coast near Cape Hatteras; one was traced from the Caribbean Sea, and five were first shown over the ocean. The general direction of movement of the depressions was northeastward, excepting one, whose course was about south-southeast.

As compared with the corresponding months of previous years, the weather over the north Atlantic Ocean during February, 1887, was seasonable; the depressions traced corresponded closely in number and character with those charted and described for previous years, and phenomena of an unusual nature were not reported.

The following are brief descriptions of the depressions traced:

1.—This storm was central on the 1st in about N. 54°, W. 35°, whence it moved ene. to N. 57°, W. 22° by the 2d, after which it passed to the northward of Scotland, where it was apparently central on the 3d. The depression exhibited considerable energy throughout its course, and central pressure ranging below 29.00 (736.6) was indicated during the 2d and 3d.

The following special reports have been rendered relative to disturbances encountered within the area of this depression:

Third Officer H. Mayer, of the s. s. "Hermann," Capt. A. Kohlmann, commanding, reports: "1st, in N. 48° 13', W. 30° 25', from 7 p. m., had nearly a full hurricane from w; lowest barometer 29.61 (752.1); wind moderated after midnight." Capt. W. Rea, of the s. s. "Bassano," reports a whole gale from sw. to nw.; lowest barometer, 29.13 (739.9), at 8 p. m. of the 2d, in N. 54° 11', W. 18° 28'. Capt. E. Maddox, of the s. s. "Norseman," reports a fresh westerly gale from the 1st to the 3d; lowest barometer, 29.20 (741.7), at 12 noon of the 2d, in N. 51° 13', W. 23° 42'. This gale was attended by severe hail squalls throughout, and rain and sleet at times, and high seas. Captain Trinick, of the s. s. "Milanese," reports a strong westerly gale during the 1st and 2d; lowest barometer, 29.48 (748.8), at noon of the 2d, in N. 47° 57', W. 25° 52'.

Capt. B. Gleadell, of the s. s. "Germanic," reports a whole sw. gale on the 2d; lowest barometer, 29.49 (749.0), at 4 a. m., in N. 48° 5', W. 41° 17'. Capt. C. Heibich, of the s. s. "Wieland," reports a westerly storm; lowest barometer, 29.67 (753.6), at 3 a. m. of the 2d, in N. 45° 3', W. 43° 26'. Capt. G. de Kersabiec, of the s. s. "La Normandie," reports a westerly storm from the 1st to the 3d; lowest barometer, 29.06 (738.1), at 3 p. m. of the 2d, in N. 48° 50' W. 34° 45'. During this storm the sea was monstrous, and often dangerous, the ship laboring badly even at reduced speed. Capt. W. Pearce, of the s. s. "Italy," reports a whole westerly gale during the 1st and 2d; lowest barometer, 29.32 (744.7), at 4 p. m. of the 2d, in N. 50° 09', W. 33° 02'. Capt. J. Ueberweg, of the s. s. "Waesland," reports a strong wsw. gale during the 2d and 3d; lowest barometer, 29.45 (748.0), at 1 a. m. of the 3d, in N. 50° 0', W. 17° 15'. The gale was accompanied by heavy hail squalls.

2.—This depression appeared in N. 55°, W. 20° on the 4th, whence it passed eastward over the British Isles by the 5th, without evidence of marked energy.

3.—this storm passed eastward from Newfoundland during the 4th and was central on the 5th in N. 51°, W. 38°, with strong gales and rain over a considerable area; from this position the centre of depression moved northeast to N. 58°, W. 27° on the 6th, after which it passed northeast beyond the region of observation.

The following special reports indicate the general character of this depression:

Capt. C. Heibich, of the s. s. "Wieland," reports a whole s. to nnw. gale during the 4th and 5th; lowest barometer, 29.72 (754.9), at 3 p. m. of the 4th, in N. 41° 36', W. 57° 15'. Capt. O. J. Lindall, of the s. s. "Vancouver," reports a whole westerly gale during the 4th and 5th; lowest barometer, 29.40 (746.7), at 8 a. m. of the 5th, in N. 44° 45', W. 50° 50'. The s. s. "Norseman" encountered a strong s. to w. gale from the

4th to the 6th; lowest barometer, 29.30 (744.2), at 12 noon of the 5th, in N. 48° 55', W. 37° 38'. Capt. A. McDougall, of the s. s. "Prussian," reports a fresh westerly gale on the 6th; lowest barometer, 29.53 (750.0), at 4 p. m., in N. 54° 38', W. 20° 0'. Capt. A. Potjer, of the s. s. "Schiedam," reports a whole s. to w. gale on the 5th and 6th; lowest barometer, 29.45 (748.0), at 3 a. m. of the 6th, in N. 49° 0', W. 29° 40'.

4.—This depression apparently developed in the vicinity of Nova Scotia during the 6th and moved eastward to N. 43°, W. 53° by the 7th, whence it circled rapidly northeast to N. 53°, W. 32° by the 8th, after which it passed northeast beyond the region of observation. The storm attained great strength during the 8th, with pressure ranging below 29.00 (736.6).

The following special reports are descriptive of the general meteorological conditions which attended the depression:

Capt. L. A. Müller, of the s. s. "Sorento," reports a hurricane on the 7th and 8th; wind backed from sw. to se. and veered to nw.; lowest barometer, 28.38 (720.8), at midnight of the 7th, in N. 48° 20', W. 34° 0'. While the wind was blowing with hurricane force from the se. at midnight of the 7th, a heavy thunder-storm prevailed, with vivid lightning. Capt. J. Ueberweg, of the s. s. "Waesland," reports a strong gale on the 7th and 8th; wind backed from ne. to n.; lowest barometer, 29.45 (748.0), at 10 p. m. of the 7th, in N. 46° 40', W. 39° 15'. Mr. James Lynch, observer on the s. s. "Spain," Capt. W. A. Griffiths, commanding, reports: "7th, midnight, strong and increasing breeze, falling barometer, hard squalls, with rain, wind ne. 8th, wind increased to a strong gale, with heavy confused sea, hard squalls, and vivid lightning; 8 a. m., wind blowing with hurricane force and veering to sw.; lowest barometer, 28.55 (725.2), in N. 49° 24', W. 33° 58'; after the storm the wind veered to northward."

Capt. R. F. Jones, of the s. s. "Galileo," reports a strong gale on the 8th; wind veered from s. to w.; lowest barometer, 29.66 (753.4), at 10.20 a. m., in N. 49° 12', W. 26° 29'. The gale blew strongest between s. and ssw. from 8 a. m. to 4 p. m. Capt. Wm. Rea, of the s. s. "Bassano," reports a whole gale on the 7th and 8th; wind backed from wsw. to se. and shifted suddenly to nnw.; lowest barometer, 28.62 (726.9), at 4 a. m. of the 8th, in N. 49° 08', W. 36° 35'. The wind blew hurricane force, with shift to nnw., accompanied with hail and sleet. Capt. J. H. Jones, of the s. s. "Rydal Water," reports a hurricane on the 7th and 8th; wind veered from s. to wsw.; lowest barometer, 29.30 (744.2), at 4 a. m. of the 8th, in N. 45° 43', W. 33° 13'. Capt. H. Parsell, of the s. s. "Adriatic," reports a strong to whole gale on the 7th and 8th; wind backed from se. to ne.; lowest barometer, 29.74 (755.4), at 10 a. m. of the 8th, in N. 47° 55', W. 37° 10'. Capt. A. Albers, of the s. s. "Rugia," reports a whole gale from the 7th to the 9th; wind backed from sw. to se., then, at 3.10 a. m. of the 8th, shifted suddenly to n., with force 11; lowest barometer, 28.60 (726.4), at 3 a. m. of the 8th, in N. 48° 9', W. 35° 58'.

Capt. W. Fitt, of the s. s. "Brooklyn City," reports having encountered a hurricane on the 8th, in N. 51° 20', W. 27° 0'; wind veered from se. to ssw.; ship hove-to nine hours in a very heavy sea. Capt. W. A. Griffiths, of the s. s. "Spain," reports a hurricane on the 8th; wind set in se. a whole gale, veered to sw. and calm, then to nw. hurricane; sea very high, and ship's head could not be seen for drifts; lowest barometer, 28.55 (725.2), at 10.10 a. m., in N. 49° 24' W. 33° 58'. Capt. T. Jungst, of the s. s. "Ems," reports a hurricane on the 8th; wind backed from sw. to n.; lowest barometer, 28.58 (725.9), at 2 a. m., in N. 47° 50', W. 37° 10'. From 1.30 a. m. till nearly 2 a. m. it was nearly calm, then the gale set in and occasioned a violent cross sea, in which the vessel labored fearfully. Capt. A. Potjer, of the s. s. "Schiedam," reports a heavy storm on the 7th and 8th; wind backed from se. to n. and nnw.; lowest barometer, 28.65 (727.8), at 2 a. m. of the 8th, in N. 47° 40', W. 37° 10'.

Capt. W. McNay, of the s. s. "Palmyra," reports: "February 8th, 1.45 a. m., in N. 48° 10', W. 36° 0', during thunder and lightning, a meteoric rock, resembling a ball of bluish electric light about one and one-half feet in diameter, shot

across the ship's bridge about ten feet overhead, moving from se. to nw., and fell in the sea with a sizzling noise; sparks of fire flew from the rock in its passage, leaving a bluish trail of light and a strong smell of sulphur. At the time this phenomenon appeared the wind was ssw., force 8; barometer 29.58 (751.3).

5.—This depression first appeared to the northward of the Azores on the 9th, and, moving northwest, passed north of the region of observation after the 10th. The depression, although of but moderate depth, occasioned gales attaining hurricane force during the 10th, of which the following reports are brief descriptions:

The s. s. "Kansas" encountered a hurricane on the 10th; wind veered from ene. to s., w., and nnw.; lowest barometer, 29.60 (751.8), at 8 a. m., in N. 48° 24', W. 34° 40'. Capt. A. Potjer, of the s. s. "Schiedam," reports a whole gale from the 9th to the 11th; wind veered from sse. to nw.; lowest barometer, 29.27 (743.5), at 5 a. m. of the 10th, in N. 45° 10', W. 47° 45'. Capt. E. Bentley, of the s. s. "Wisconsin," reports a whole gale on the 10th and 11th; wind shifted from sw. to wnw.; lowest barometer, 29.10 (739.1), at 8 p. m. of the 10th, in N. 47° 0', W. 39° 30'.

6.—This depression moved ese. over Newfoundland during the night of the 9th and was central on the 10th in N. 45°, W. 47°, with central pressure about 29.40 (746.7), whence it circled ene. to N. 48°, W. 34° by the 11th, after which it apparently continued an ene. course and gradually filled up. While no special reports have been rendered relative to this depression, fresh to strong gales and rain were recorded with the regular observations of the 11th within its area.

7.—This depression moved from south of Newfoundland on the 12th to N. 51°, W. 39° by the 13th, after which it apparently passed northeast and dissipated. The depression was of moderate depth throughout, and, as is shown by the following special reports, occasioned hard gales to the southward of Nova Scotia and Newfoundland during the 11th and 12th, while central to the westward of Newfoundland.

Capt. E. Maddox, of the s. s. "Norseman," reports a terrific nw. gale during the night of the 11-12th, when sixty miles east of Boston; on approaching land the wind abated. Capt. ain McKee, of the s. s. "Mercedes," reports a strong gale on the 11th and 12th; wind veered from sw. to n. by e.; lowest barometer, 29.70 (754.4), at 12 midnight of the 11th, in N. 35° 18', W. 72° 0'. Capt. G. Turnbull, of the s. s. "Ella Sayer," reports a strong sw. to nw. gale on the 11th; lowest barometer, 29.80 (756.9), at 8 p. m., in N. 36° 39', W. 69° 2'. Capt. J. Ueberweg, of the s. s. "Waesland," reports a strong sw. to nw. gale on the 11th and 12th; lowest barometer, 29.38 (746.2), at 12 midnight of the 11th, in N. 41° 15', W. 63° 0'. Capt. A. Renflew, of the s. s. "Scandinavia," reports a storm attaining force 11 during the 11th and 12th; wind veered from sw. to nnw.; lowest barometer, 29.41 (747.0), at 8 a. m. of the 12th, in N. 42° 30', W. 55° 30'.

Capt. Edward Bentley, of the s. s. "Wisconsin," reports a strong gale on the 12th and 13th; wind veered from sw. to n.; lowest barometer, 29.20 (741.7), at 4 p. m. of the 12th, in N. 43° 45', W. 48° 50'. Capt. D. D. Galbraith, of the s. s. "Durham City," reports a strong gale on the 13th and 14th; wind veered from s. to nnw.; lowest barometer, 29.11 (739.4), at 4 a. m. of the 14th, in N. 47° 24', W. 32° 0'. The gale was attended by heavy rain and high seas, and blew strongest, force 9, from s., from midnight of the 13th to 6 a. m. of the 14th, then veered suddenly to nnw. and moderated at 7 a. m.

8.—This depression appeared in N. 47°, W. 36° on the 15th and moved nne. to N. 50°, W. 35° by the 16th, without evidence of special energy, after which it disappeared to the northward.

9.—This storm was central over the Gulf of Saint Lawrence on the 17th, whence it passed northeast to N. 53°, W. 42° by the 18th, from which position it moved northeast beyond the region of observation. The depression was of slight depth and occasioned moderate gales and rain.

10.—This depression passed over the northern extremity of Newfoundland during the 20th and was central in N. 55°, W. 33° on the 21st, whence it moved slowly east to W. 24° by the 22d, thence passing ene. the centre of depression is located in N. 52°, W. 16° under date of the 23d, after which it apparently advanced to the north of Scotland. The storm augmented energy as it advanced eastward, as is shown by the following special reports:

Capt. R. P. Moore, of the s. s. "Siberian," reports a whole westerly gale on the 21st and 22d; lowest barometer, 29.11 (739.4), from 8 p. m. to midnight of the 21st, in N. 53° 0', W. 22° 35'. The gale was accompanied by rain and very high seas. Capt. P. J. Irving, of the s. s. "Celtic," reports a whole gale on the 20th and 21st; wind veered from sse. to wnw.; lowest barometer, 29.27 (743.4), at noon of the 21st, in N. 49° 14', W. 32° 0'. Captain Vögelgesang, of the s. s. "Rhaetia," reports a whole gale on the 21st and 22d; wind veered from sw. to wnw.; lowest barometer, 29.40 (746.7), at 4 a. m. of the 1st, in N. 46° 36', W. 38° 22'. Capt. M. de Jousselein, of the s. s. "La Bretagne," reports a strong gale from the 21st to the 23d; lowest barometer, 29.10 (739.0), at 4 a. m. of the 23d, in N. 48° 27', W. 30° 0'; wind shifted from s. to nw. Capt. H. Richter, of the s. s. "Saale," reports a storm on the 22d and 23d; wind veered from nnw. to nne.; lowest barometer, 29.36 (745.7), at 3 p. m. of the 22d, in N. 45° 11', W. 39° 32'.

Capt. J. W. Massam, of the s. s. "Principia," reports: "21st, in N. 49° 34', W. 22° 0', at 4 a. m. of the 22d, strong gale, veering and backing from sw. to w., with heavy rain and high seas; 1 p. m., backed to ssw.; 8 p. m., backed to se.; midnight, barometer 28.78 (731.0). 23d, 1 a. m., wind se., force 9, vivid lightning, and heavy rain; 1.30 a. m., backed to ne., force 11, very heavy confused sea; 4 a. m., in N. 49° 10', W. 27° 40', barometer 28.50 (723.9); 5 a. m., backed to n., force 9, high seas and terrific squalls; 6 p. m., backed to nw., force 9, heavy rain squalls; moderated at midnight." Capt. George Moodie, of the s. s. "State of Georgia," reports: "23d, in N. 53° 51', W. 24° 7', wind s. to sw., force 4 to 7, rain at times; 9 a. m., wind shifted to nw. and blew with hurricane force for two hours, accompanied with heavy rain; wind then backed to westward and moderated; lowest barometer 28.42 (721.9); heaviest sea from southward."

11.—This depression first appeared in N. 49°, W. 35° on the 24th, whence it had advanced from the southwestward; from this position it moved slowly northeastward to N. 51°, W. 31° by the 25th; thence passing northeast to N. 55°, W. 17° by the 26th the depression disappeared in the direction of the north Scottish coast. This area was accompanied by disturbances of pronounced violence, and barometric pressure ranging below 28.50 (723.9) was shown on the 25th.

The following special reports have been made in connection with the passage of this depression:

Mr. J. H. Newman, observer on the s. s. "Denmark," Capt. R. S. Rigby, commanding, reports: "24th, 17 hours 29 minutes, in N. 49° 15', W. 22° 21', barometer 29.32 (744.7) and falling, wind sse., moderate, increasing gale, with heavy passing clouds and rough sea from sse.; 20 hours 30 minutes, barometer 29.00 (736.6), wind s. by e., strong gale with overcast sky and misty rain, very heavy southerly sea running, causing the vessel to labor heavily and ship large quantities of water fore and aft; brought ship's head to the wind; noon, barometer 28.90 (734.0), blowing a whole gale from s. by e., with a very dangerous sea running. 25th, 4 hours 33 minutes, in N. 49° 3', W. 23° 17', barometer 28.84 (732.5), lowest reading, gale moderating and sky clearing; during the balance of the day the barometer rose steadily, and the wind veered to wsw. and wnw., afterwards becoming variable between s. and wsw., with violent squalls, heavy showers of rain, and a high confused sea."

The s. s. "Siberian" experienced a whole gale from 8 p. m. of the 24th to 2 p. m. of the 25th; wind backed from ne. to nne.; lowest barometer, 28.89 (733.8), at 10 p. m. of the 24th, in N. 47° 39', W. 37° 35'. Capt. G. Moodie, of the s. s. "State

of Georgia," reports: "24th, the wind for the last eight hours has been baffling all around the compass, the barometer at the same time going down rapidly. In the afternoon the wind settled about ne. and increased to force 11, and at 3 a. m. of the 25th the barometer stood at 28.88 (733.5); 6 a. m. the wind began to back to northward, with constant blinding rain; then backed to nw. and moderated, with clearing weather; heaviest sea from ne.; barometer lowest in N. 50° 56', W. 35° 12', on the 25th." Capt. W. P. Couch, of the s. s. "Ontario," reports: "24th, 8 a. m., wind freshening from northward and veering to nne., barometer 29.80 (756.9); noon, in N. 45° 44', W. 39° 35', strong breeze from nne., with hail squalls; 4 p. m., strong gales, heavy squalls with hail, barometer 29.50 (749.3); 6 p. m., heavy gale, hail and sleet, barometer 28.97 (735.8), heavy sea, wind nne.; during the a. m. of the 25th the barometer rose, and the gale moderated, backing to nw."

Capt. C. Ludwig, of the s. s. "Servia," reports: "25th, in N. 49° 56', W. 12° 56', at noon; in the forenoon, fair; at noon the wind suddenly freshened; 5 p. m., storm and heavy sea from ssw.; during the night heavy gale from the s. and tremendous sea; the ship labored heavily and shipped much water; from 4 to 8 a. m. of the 26th, in N. 49° 46', W. 19° 34', at noon, storm decreased and veered to westward." Commodore W. G. Randle, of the s. s. "Westernland," reports a whole gale on the 24th and 25th; wind veered from sse. through w. to n.; lowest barometer, 28.42 (721.9), at 1 a. m. of the 25th, in N. 45° 54', W. 35° 57'. The gale was accompanied by violent rain squalls, thunder, and lightning.

Capt. G. Meier, of the s. s. "Elbe," reports a westerly storm from the 24th to the 26th; lowest barometer, 28.21 (716.5), at 7 a. m. of the 25th, in N. 47° 14', W. 31° 50'. The s. s. "Principia" encountered a hurricane, attaining greatest force at midnight of the 24th, in N. 47° 25', W. 36° 30', when barometer stood 28.77 (730.7). Capt. Samuel Walters of the s. s. "Iowa," reports a whole gale on the 25th; wind veered from sse. to nw.; lowest barometer, 28.28 (718.3), at 6.46 a. m., in N. 47° 20', W. 33° 25'. Capt. H. C. v. d. Zee, of the s. s. "Zaandam," reports a storm on the 25th and 26th; wind veered from sse. to sw.; lowest barometer, 29.10 (739.1), at 3 p. m. of the 25th, in N. 49° 2', W. 23° 27'.

12.—This depression was central off the southwest coast of Newfoundland on the 25th, whence it passed east to N. 48°, W. 45° by the 26th; by the 27th the storm-centre had moved to N. 50°, W. 30°, after which it passed northeast beyond the region of observation. Disturbances of great violence accompanied the passage of this depression, and the following special reports refer to storms encountered previous, and subsequent, to its passage eastward from Newfoundland:

Capt. C. W. Möller, of the s. s. "Geiser," reports: "24th, at noon, in N. 41° 57', W. 58° 56', calm, with clear sky, barometer 29.93 (760.2); in the afternoon a breeze sprang up from sse., gradually increasing, sky overcast, barometer falling rapidly; 7 p. m., barometer 29.29 (744.0), wind sse., force 8 to 10, heavy-rain showers; 8.20 p. m., in N. 41° 45', W. 60° 53', barometer 29.10 (739.0), wind sse., force 10, blowing with terrible gusts; 9 p. m., the barometer read lowest, 29.06 (738.0); in a squall of fearful violence the wind shifted to w. by n. and wnw., and the weather cleared. 25th, 3 a. m., the wind increased to hurricane force from wnw., with snow squalls and rising barometer; noon, in N. 41° 27', W. 62° 25', barometer 29.37 (746.0), wind nw., force 9 to 11; during the afternoon the barometer continued to rise and the gale moderated."

Capt. T. Young, of the s. s. "Mareca," reports a storm from the 24th to the 26th; wind veered from se. to nw.; lowest barometer, 29.31 (744.5), at 8 p. m. of the 24th, in N. 43° 0', W. 62° 30'. Capt. G. J. Vis, of the s. s. "Rotterdam," reports a storm from the 24th to the 26th; wind veered from se. to n.; lowest barometer, 29.00 (736.6), at 10 p. m. of the 24th. Capt. G. Evans, of the s. s. "Peconic," reports: "24th, in N. 39° 55', W. 62° 41' (at noon); in the p. m. the wind veered to southward; 4 p. m. (Greenwich mean time), heavy gale from s., with high sea running, and rain; barometer fell to 29.43 (747.5);

6 p. m., gale gradually veered around to westward." Capt. M. de Jouselin, of the s. s. "La Bretagne," reports a storm on the 25th and 26th; wind veered from s. to nw.; lowest barometer, 29.29 (744.0), from 7 to 9 a. m. of the 25th, in N. 42° 35', W. 54° 0'.

Captain Vogelgesang, of the s. s. "Rhaetia," reports: "25th, 4 a. m., in N. 43°, W. 57°, barometer 29.27 (743.4), vivid lightning to the westward; the wind suddenly shifted in a heavy rain squall from sse. to w. and increased to a storm; at 12 noon the barometer read lowest, 29.21 (741.9), and the wind was blowing a storm, with heavy squalls from the westward; the barometer commenced to rise slowly, but gale and sea increased, the wind hauling to northerly; during the afternoon and night of the 25th it blew a heavy storm from nw., with snow squalls of hurricane force, and a high nw. sea; during the 26th the storm moderated and subsided to a strong breeze, in N. 41° 57', W. 60° 50', at 4 p. m." Capt. J. Sumner, of the s. s. "Egypt," reports a whole gale on the 25th and 26th; wind veered from se. to w., with very heavy sw. sea; lowest barometer, 29.20 (741.7), at 11 p. m. of the 25th, in N. 42° 26', W. 53° 10'.

The s. s. "Siberian" encountered a whole gale on the 26th and 27th; lowest barometer, 29.05 (737.9), at noon of the 26th, in N. 43° 55', W. 44° 46'. The gale was accompanied by terrific squalls and high seas, and blew strongest from nnw. from 2 a. m. to 10 a. m. of the 27th, during which time the ship was hove-to. Capt. G. Meiers, of the s. s. "Elbe," reports a whole n. veering to s. gale on the 26th and 27th; lowest barometer, 28.90 (734.0), at midnight of the 26-27th, in N. 44° 19', W. 41° 50'. Capt. Horlor, of the "Jersey City," reports: "26th, 13 hours 28 minutes, in N. 44° 55', W. 42° 10', blowing a moderate gale from w., with violent squalls, accompanied with hail and sleet; wind suddenly fell calm and a large black mass of clouds rose on the horizon, extending from nw. to nnw., and suddenly disappeared in the sw. The calm lasted ten to fifteen minutes, the barometer in the meantime falling from 29.10 (739.1) to 29.05 (737.9) and then went up to 29.20 (741.7), when the wind veered to n. and blew a perfect hurricane for forty minutes, then veered to ne. and subsided into a strong gale."

OCEAN ICE.

The following table shows the comparison between the southern and eastern limits of the ice area for February, 1887, and the same month of the four preceding years:

Southern limit.			Eastern limit.		
Month.	Lat. N.	Lon. W.	Month.	Lat. N.	Lon. W.
February, 1883.....	42 01	52 46	February, 1883.....	46 19	45 44
February, 1884.....	42 00	50 00	February, 1884.....	46 50	43 45
February, 1885.....	41 50	51 10	February, 1885.....	47 52	42 00
February, 1886.....	46 10	47 15	February, 1886.....	48 00	44 47
February, 1887.....	40 00	48 00	February, 1887.....	46 26	41 50

On chart i are also exhibited the eastern and southern limits of the region within which icebergs and field ice have been observed during February, 1887. These limits have been determined from reports furnished by shipmasters, and from data collected by the Signal Service agencies.

The easternmost ice was passed on the 23d, in N. 46° 26', W. 41° 50', by the s. s. "Egypt," and the southernmost ice reported was observed in N. 40°, W. 48° on the 8th, from the s. s. "Sarnia." Icebergs were most frequently encountered over, and along the east and southeast margins of, the Banks of Newfoundland, and isolated bergs were observed as far west as Sable Island.

In January, 1887, the only ice reported was a medium sized berg which was observed in N. 48° 30', W. 46° 0' on the 30th.

As compared with the record of ice encountered during the corresponding month of 1886, the limits of the area within which ocean ice has been reported for February, 1887, are extended about three degrees eastward and eight degrees southward. In February, 1886, the quantity of ice observed over,

and in the vicinity of, the Banks of Newfoundland, when compared with the average for four years, was largely deficient; in February, 1887, the amount reported corresponded closely to the average.

Icebergs and field ice were reported, as follows:

7th.—The s. s. "Norseman," in N. 46° 25', W. 46° 45', at 9.45 p. m., passed a small iceberg. The s. s. "Hibernian," in N. 46° 28', W. 46° 47', passed large quantities of field ice; had to steer south about ten miles to avoid coming into contact with it.

8th.—The s. s. "Sarnia," in N. 40°, W. 48°, passed forty miles of field ice and numerous icebergs. The s. s. "City of Chester," at 7 a. m., in N. 46° 20', W. 46° 40', fell in with field ice; at 6 a. m. the temperature of the air was 26°, and of the water 42° (Fahr.); the course of the vessel was changed about fifty miles sw. to clear the ice; two medium-sized icebergs and several smaller ones were passed soon after falling in with the field ice. The s. s. "Hekla," at night, between N. 47° 30', W. 47° 0', and N. 45° 30', W. 48° 0', fell in with great ice fields and several icebergs; had to turn back and steer east for some hours to get clear of it. The s. s. "Wyoming," at 9.25 a. m., in N. 46° 40', W. 48° 0', till 2.40 p. m., in N. 46° 52', W. 47° 10', passed through large quantities of field ice, and in N. 46° 52', W. 47° 10', passed four icebergs.

9th.—The s. s. "England," in N. 44° 22', W. 48° 38', at 10.50 a. m., passed through several fields of ice. The s. s. "Hibernian," with Sable Island bearing south distant seventy miles, passed a quantity of field ice.

10th.—The s. s. "Ethiopia," from N. 48° 13', W. 44° 29' to N. 47° 50', W. 45° 03', passed an iceberg and quantities of field ice. The s. s. "Spain," in N. 46° 50', W. 45° 17', passed an iceberg; also passed field ice and small bergs from N. 46° 33', W. 46° 22', to N. 45° 05', W. 48° 20'; had to steer south twenty-five miles to clear field ice. The s. s. "Rugia," in N. 44° 30', W. 48° 49', at 5 a. m., passed a narrow and very long field of snow ice, which drove in direction from north to south. The s. s. "Ems," in N. 44° 50', W. 48° 47', at 2 p. m., passed young ice.

11th.—The s. s. "Bassano," in N. 44° 37', W. 48° 20', at 2.15 p. m., passed an iceberg. The s. s. "Prussian," from N. 46° 55', W. 45° 3', to N. 46° 52', W. 45° 43', between 2.40 and 3.20 p. m., passed a number of large and small icebergs. The s. s. "Ethiopia," encountered icebergs and large quantities of field ice from N. 47° 21', W. 46° 44' to N. 44° 59', W. 48° 9'. The s. s. "Critic," from N. 46° 45', W. 47° 16' on the 11th, to N. 43° 14', W. 54° 14' on the 14th, passed masses of field ice and occasional icebergs.

12th.—The s. s. "Prussian," in N. 46° 20', W. 48° 50', passed several icebergs. The s. s. "British Queen," in N. 46° 15', W. 47° 12', passed through some heavy field ice, and had to run south to clear it, and from N. 45° 04', W. 57° 30' to N. 44° 48', W. 61° 13', passed through field ice, mostly light. The s. s. "British Crown," in N. 46° 52', W. 47° 38', fell in with large tracks of broken field ice; at 1 p. m. the ship was hove-to, heading sw., owing to heavy seas and field ice.

13th.—The s. s. "British Crown," at 6 a. m., passed nine icebergs and field ice; the southeast margin of the ice being in N. 46° 20', W. 46° 45'.

14th.—The s. s. "Brooklyn City," in N. 47° 20', W. 46° 0', passed a large iceberg; also passed a large berg in N. 47° 0', W. 46° 10', and in N. 47° 06', W. 46° 30' passed large fields of detached ice and numerous icebergs, both large and small, extending north and south as far as the eye could see; had to steer back se. to get clear of it. The s. s. "City of Berlin" passed a large iceberg in N. 46° 34', W. 46° 15'; 7.15 p. m., passed a quantity of pack ice; 8 p. m., passed field ice in N. 46° 20', W. 46° 30'.

15th.—The s. s. "Brooklyn City" passed an iceberg in N. 44° 10', W. 49° 30'. The s. s. "Britannic," between N. 46° 3', W. 46° 33' and N. 44° 41', W. 48° 51', passed fifteen icebergs, several very large; also large quantities of field ice to the northward. The s. s. "City of Berlin," at 2.12 a. m., saw

field ice in N. 45° 30', W. 48° 30'; temperature of air 19°, of water 21° (Fahr.). The s. s. "Gothia," between N. 45° 14', W. 44° 50' and N. 48° 8', W. 48° 40', from 1.30 p. m. to 4 p. m., passed eight ice mountains. The s. s. "Trave," in N. 44° 48', W. 47° 35', at 2.40 p. m., passed two large icebergs and one small one.

16th.—The s. s. "Trave," in N. 44° 48', W. 47° 35', passed three icebergs. The s. s. "Lord Gough," in N. 45°, W. 49°, passed several large icebergs and light field ice. The s. s. "Bohemia," between N. 44° 50', W. 48° 34' and N. 44° 24', W. 49° 15', from 3 to 4 p. m., passed fourteen icebergs from twenty to fifty feet high, and field ice.

17th.—The s. s. "Bolivia," in N. 47° 33', W. 43° 31', passed an iceberg. The s. s. "La Bourgogne," in N. 44° 54', W. 48° 34', at 5.04 a. m., passed an iceberg. On this date vessels arriving at New York from Newfoundland reported very heavy fields of ice from Mizzen Bank to Sable Island. The s. s. "Victoria," in 44° 40', from W. 48° 50' to W. 49° 0', passed a large iceberg and field ice.

18th.—The s. s. "Bolivia," in N. 45° 43', W. 47° 52', at 9 a. m., passed an iceberg, and in N. 45° 23', W. 47° 06', also passed a berg; in N. 44° 40', W. 47° 56', at 9 p. m., fell in with field ice. The s. s. "State of Pennsylvania," in N. 47° 49', W. 43° 26', passed icebergs.

19th.—The s. s. "Rhyndland," at 22 h. 29 m. (Greenwich, mean time), sighted field ice to the westward, extending north to south as far as the horizon. Entered same in N. 44° 34', W. 48° 44', and steered s. 67° w. true ten miles and cleared it. The s. s. "Hekla," in N. 44° 30', W. 49° 0', saw several ice fields and passed through quantities of small ice. The s. s. "Bolivia," in N. 43° 26', W. 49° 23', at 6 a. m., cleared field ice. The s. s. "Fulda," in N. 44° 40', W. 48° 43', at 12.45 a. m., passed ice fields. The s. s. "State of Pennsylvania," from N. 46° 5', W. 46° 26' to N. 42° 44', W. 49° 24', on the 20th, passed heavy field ice and numerous icebergs, some being very large ones. The s. s. "Ems," between N. 43° 8', W. 49° 13' and N. 43° 16', W. 49° 2', from 1 to 1.45 p. m., passed a number of icebergs.

20th.—The s. s. "Fulda," in N. 44° 40', W. 48° 43', passed a large ice field, and steered south for six hours.

21st.—The s. s. "Greece," in N. 42° 54', W. 49° 50', passed several large icebergs. The s. s. "Palestine" passed a number of icebergs, some very large, from N. 44° 50', W. 48° 20' to N. 44° 20', W. 49° 20', between 1 a. m. and 10 a. m. The s. s. "Mareca," in N. 43° 4', W. 49° 55', at 2 p. m., passed a large iceberg. The s. s. "Geiser," on the 21st and 22d, between N. 44° 8', W. 48° 14' and N. 43° 40', W. 50° 8', passed six icebergs.

22d.—The s. s. "Rotterdam," from N. 46° 4', W. 46° 10' to N. 44° 57', W. 48° 27', passed ten medium sized icebergs and several pieces of floating ice.

23d.—The s. s. "Rotterdam," in N. 43° 49', W. 52° 27', passed five miles south of a large iceberg. The s. s. "Egypt" passed an iceberg in N. 46° 26', W. 41° 50', at 5 p. m. The s. s. "Rhaetia," between N. 44° 21', W. 47° 24' and N. 44° 15', W. 48° 3', passed four medium sized and four small icebergs; passed one large berg in N. 44° 10', W. 48° 40', and one in N. 44° 8', W. 48° 57'.

24th.—The s. s. "Celtic," at 7 a. m., passed seven miles south of a large iceberg one hundred and sixty feet high; position of berg, N. 43° 40', W. 48° 01'; air temperature, 24°; temperature of water, 35° (Fahr.); at 10 a. m. passed one-fourth of a mile north of a large iceberg eighty feet high; position of berg, N. 43° 22', W. 48° 53'; air temperature, 22°; temperature of water, 30° (Fahr.); between 10.30 a. m. and 11.30 a. m. passed through a quantity of sludgy field ice; temperature of the air, 23°, of the water 28° (Fahr.). The s. s. "La Bretagne," in N. 43° 37', W. 47° 26', at 3 p. m., passed an iceberg. The s. s. "Egypt" passed an iceberg in N. 44° 24', W. 47° 20', at 2 p. m., and one in N. 44° 5', W. 47° 34', at 4 p. m.

25th.—The s. s. "Bulgarian," in N. 46° 9', W. 44° 59' at 6 p. m., passed an iceberg.

26th.—The s. s. "Bulgarian," from N. 45° 10', W. 47° 0' to N. 45° 0', W. 47° 35', from 8 a. m. to 12.30 p. m., passed several medium-sized icebergs.

27th.—The s. s. "State of Georgia," in N. 44° 5', W. 47° 20', at 6 p. m., passed two small icebergs.

FOG.

The following shows the positions of fog-areas encountered on the north Atlantic Ocean during February, 1887, as reported by shipmasters:

16th.—The s. s. "Kansas," in N. 42° 50', W. 62° 0', had dense fog from 6.15 a. m. to 10.40 a. m. The s. s. "Galileo," in N. 42° 15', W. 65° 04', had a dense fog from 5 a. m. to 10 a. m.

18th.—The s. s. "Durham City," in N. 42° 29', W. 49° 20', had dense fog from 7.30 a. m. to 10.30 a. m.

20th.—The s. s. "Manitoban," in N. 42° 38', W. 52° 12', had dense fog from 8 a. m. to 10.45 a. m. The s. s. "Mareca," in N. 44° 30', W. 45° 30', had dense fog from 5.30 p. m. to 8.15 p. m.

In each of the instances above cited the fog-areas were encountered in the second, or southeast, quadrant of areas of low barometric pressure, and along the southern edge of the ice-field, with wind blowing from the southwest quadrant along the course of the Gulf Stream. It would therefore appear that the causes which contributed to the formation of fog during this month existed, as in previous months, in the southeast quarter of cyclonic areas; while an additional and obvious cause of fog formation appeared in the intermingling of warm, humid air from the Gulf Stream and the colder air over, and along the southern edge of, the ice-field.

TEMPERATURE OF THE AIR.

[Expressed in degrees, Fahrenheit.]

The distribution of mean temperature over the United States and Canada for February, 1887, is exhibited on chart ii by the dotted isothermal lines; and in the table of miscellaneous data are given the monthly mean temperatures, with the departures from the normal, for the various stations of the Signal Service. On chart iv the departures from the normal are illustrated by lines connecting stations of normal or equal abnormal values.

The mean temperature of the month is below the normal in Maine, the upper lake region, and from thence westward to the Pacific; it also below in Nevada, California, and western Arizona. In the southern and southeastern districts of the United States it is above the normal. The most noteworthy feature in connection with the temperature of the month is the unusually cold weather that has prevailed in Dakota, Montana, and Idaho; at stations in these territories the mean temperature of the month ranges from 10° to 20° below the normal. The mean of the month is also largely below the normal in Washington Territory, Oregon, and California. The greatest departures in excess of the normal occur in the south Atlantic and Gulf states, Tennessee, and Florida, in this region the means of the month average about six degrees higher than the usual February temperature.

RANGES OF TEMPERATURE.

The monthly, and the greatest and least daily, ranges of temperature, are given in the table of miscellaneous meteorological data.

The following are some of the greatest and least monthly ranges at Signal Service stations:

Greatest.		Least.	
Fort Assinaboine, Montana.....	101.5	Key West, Florida.....	23.4
Holena, Montana.....	101.5	Galveston, Texas.....	27.5
Fort Maginnis, Montana.....	98.1	Tatoosh Island, Washington Ter.....	32.3
Fort Buford, Dakota.....	88.4	Hatteras, North Carolina.....	33.4
Bismarck, Dakota.....	88.0	San Diego, California.....	33.5
Poplar River, Montana.....	87.8	San Francisco, California.....	33.9
Deadwood, Dakota.....	86.9	Neah Bay, Washington Ter.....	35.0

DEVIATIONS FROM NORMAL TEMPERATURES.

In the table below are given, for certain stations, as reported by voluntary observers, the normal temperatures of

February for a series of years, the mean temperature for February, 1887, and the departures from the normal:

Station.	County.	Normal temperature for February.	Number of years.	Mean temperature for Feb., 1887.	Departure.
<i>Arkansas.</i>					
Lead Hill.....	Boone.....	38.8	5	43.3	+ 4.5
<i>California.</i>					
Fall Brook.....	San Diego.....	48.1	11	48.5	+ 0.4
Sacramento.....	Sacramento.....	49.7	21	43.7	- 6.0
<i>Connecticut.</i>					
Middletown.....	Middlesex.....	26.8	29	28.4	+ 1.6
New Haven.....	New Haven.....	28.2	101	29.8	+ 1.6
Thompson.....	Windham.....	26.2	30	24.8	- 1.4
Waterbury.....	New Haven.....	27.6	12	26.1	- 1.5
<i>Florida.</i>					
Archer.....	Alachua.....	58.6	4	58.9	+ 0.3
<i>Illinois.</i>					
Collinsville.....	Madison.....	31.6	8	36.6	+ 5.0
Mattoon.....	Coles.....	31.3	7	38.0	+ 6.7
Peoria.....	Peoria.....	29.4	31	32.7	+ 3.3
Riley.....	McHenry.....	21.8	26	21.6	- 0.2
Sycamore.....	De Kalb.....	21.9	6	23.4	+ 1.5
<i>Indiana.</i>					
Lafayette.....	Tippecanoe.....	29.2	8	31.5	+ 2.3
Logansport.....	Cass.....	28.5	33	32.9	+ 4.4
Mauzy.....	Rush.....	28.1	7	32.6	+ 4.5
Vevay.....	Switzerland.....	35.9	21	41.3	+ 5.4
<i>Iowa.</i>					
Cresco.....	Howard.....	17.8	10	13.1	- 4.7
Monticello.....	Jones.....	21.4	34	19.5	- 1.9
Muscatoine.....	Muscatoine.....	24.4	49	23.4	- 1.0
<i>Kansas.</i>					
Independence.....	Montgomery.....	35.1	16	35.2	+ 0.1
Wellington.....	Sumner.....	32.3	9	34.9	+ 2.6
<i>Louisiana.</i>					
Grand Coteau.....	Saint Landry.....	54.6	4	64.6	+ 10.0
<i>Maine.</i>					
Belfast.....	Waldo.....	22.3	28	20.3	- 2.0
Cornish.....	York.....	22.5	30	19.1	- 3.4
Gardner.....	Kennebec.....	20.5	51	19.8	- 0.7
Orono.....	Penobscot.....	18.9	19	17.8	- 1.1
<i>Maryland.</i>					
Fallston.....	Harford.....	31.9	16	35.3	+ 3.4
<i>Massachusetts.</i>					
Cambridge.....	Middlesex.....	26.1	65	26.8	+ 0.7
Fitchburg.....	Worcester.....	24.1	31	24.1	0.0
New Bedford.....	Bristol.....	28.9	75	29.4	+ 0.5
Somerset.....	Bristol.....	27.4	17	30.1	+ 2.7
Springfield.....	Hampden.....	25.7	20	26.7	+ 1.0
Taunton.....	Bristol.....	28.0	16	30.1	+ 2.1
Williamstown.....	Berkshire.....	22.4	34	24.0	+ 1.6
<i>Nevada.</i>					
Carson City.....	Ormsby.....	32.9	8	27.5	- 5.4
<i>New Brunswick.</i>					
Saint John.....	Saint John.....	18.1	27	18.1	0.0
<i>New Hampshire.</i>					
Concord.....	Morrismac.....	24.4	19	24.0	- 0.4
Hanover.....	Grafton.....	18.8	24	18.2	- 0.6
<i>New Jersey.</i>					
South Orange.....	Essex.....	29.8	17	32.7	+ 2.9
<i>New York.</i>					
Factoryville.....	Tioga.....	23.9	5	28.9	+ 5.0
North Volney.....	Oswego.....	22.1	19	22.8	+ 0.7
Palermo.....	Oswego.....	21.1	33	20.9	- 0.2
<i>Ohio.</i>					
Wauseon.....	Fulton.....	25.4	17	28.3	+ 2.9
<i>Pennsylvania.</i>					
Dyberry.....	Wayne.....	22.6	23	25.9	+ 3.3
<i>South Carolina.</i>					
Stateburg.....	Sumter.....	51.1	7	54.1	+ 3.0
<i>Texas.</i>					
New Ulm.....	Austin.....	56.0	14	59.2	+ 3.2
<i>Vermont.</i>					
Lunenburg.....	Essex.....	17.2	39	15.0	- 2.2
Newport.....	Orleans.....	17.6	12	15.0	- 2.6
Strafford.....	Orange.....	17.9	12	17.5	- 0.4
<i>Virginia.</i>					
Bird's Nest.....	Northampton.....	41.9	19	44.4	+ 2.5
Dale Enterprise.....	Rockingham.....	35.3	7	42.0	+ 6.7
Variety Mills.....	Nelson.....	38.5	10	40.6	+ 2.1
Wytheville.....	Wythe.....	37.1	23	40.0	+ 2.9
<i>West Virginia.</i>					
Helvetia.....	Randolph.....	34.9	10	42.0	+ 7.1
<i>Wisconsin.</i>					
Delavan.....	Walworth.....	16.4	4	21.4	+ 5.0

• From the "Bulletin of the New England Meteorological Society."

The following notes, in connection with this subject, are furnished by voluntary observers:

Arkansas.—Lead Hill, Boone county: the mean temperature of the winter of 1886-'87, 36° 7', is 1° 3' above the winter average of the past five years.

Illinois.—Riley, McHenry county: the mean temperature of the winter of 1886-'87, 16° 0', is 4° 5' below the mean of twenty-four winters past; the winters only of 1872-'73, 1874-'75, 1878-'79, 1880-'81, 1882-'83, and 1884-'85 were colder. Highest temperature of the past winter, 50° 4', on December 11th; lowest, -24° 9', on January 7th; range for the winter, 75° 3'.

Indiana.—Mauzy, Rush county: during February of the past seven years the highest monthly mean, 38° 2', occurred in 1882; the lowest mean, 14° 8', in 1885.

Kansas.—Wellington, Sumner county: during February of the past nine